Work Order Tuesday, September		PM		*898	357*							Page 1
Revision ID:	212-664-107TRN osstube Turning Deta	il		Accept	*N90	0040	100)* s	Setup S	start Stop	*N:	S1*
Required Date: 9/1		Qty: 1.00 Qty: 1.00	*1* *1*		Cust Iter Custome							
- 1-1 - 1-1	rocess Plan:		Date:	Tooling: SPC (Y/N):		Date:		F		Start Stop	*NI *NI	R1* R2*
Sequence ID/ Work Center ID	Operat Descrip			Set Up/ Run Hours	Tool II	Tool#	Plan Code	Accept Qty	Rejec Qty		Reject Number	Insp. Stamp
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D212-664-147	Rev B(DE0)				- 120							
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Mori Seiki CNC Lathe I	Large		vith sand & install plugs DT		er Folio FA705				/			•.
		2-Turn first 3-Blend trat FOLIO REV DWG REV: *Use mill be	side as per Folio FA113 nsition lines only, **do not	sand whole tube**:			2					
*110 *11 0 *	. QC1- Ins	spect dimension	s to dimension sheet	0.00			•	/	1	\$ 	Kc	12-9-1
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												DQA:	Date:	
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Outside Dimensions

Wave/Twist in Tube

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0.00

Memo

Quality Control

											DQA:	Date:	
NCR:	Yes	/ No					WORK ORDER NON-C		NFORM	MANCE / UPDATE			
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Vork Ord	er:						DISPOSITION			AGAINST DI	EPARTMENT,	PROCESS	
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Wave/Twist in Tube

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Work Order ID 89857 Page 3 Tuesday, September 11, 2012 3:46:01 PM D212-664-107TRN Accept *N900040100* Item ID: Setup Start **Revision ID:** Stop Crosstube Turning Detail **Item Name:** 9/11/2012 Start Qty: 1.00 **Start Date: Cust Item ID:** Required Date: 9/17/2012 Req'd Qty: 1.00 **Customer:** Reference: Run **Tooling:** Process Plan: Date: Date: **Approvals:** Date: **SPC (Y/N):** QC: Date: Sequence ID/ Tool ID Tool # Plan Accept Reject Reject **Operation** Set Up/ Insp. Work Center ID Description Code Qty Qty Number Stamp Run Hours 0.00 140 QC8- Inspect parts - second check 12-9-19 *140* QC 0.00 Memo Quality Control 0.00 145 Km 12-9-19 *145* 0.00 Crosstubes Memo GRIND ONLY TRANSITION LINES SMOOTH LONGITUDE WAY. Crosstubes 0.00 150 12-9-20 *150* 0.00 HandFXtube Memo 1- PRESSURE WASH X-TUBE INSIDE AND OUT Hand Finishing Crosstubes

2- ACID ETCH X-TUBE INSIDE AND OUT. USE RED SCOTCH BRITE

											DQA:	Date:	
NCR:	Yes	/ No				WORK ORDER NON-	COI	NFORM	MANCE / UPI	DATE	•		
									<u>.</u>		QA Closed:	Date:	
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NCR	No.					Work Order Update			Large Fab	Composite	, Rec/stor	Supplier	Other
Root		:			Descr	ription of work order update	П	nitial	Act	tion	Sign &		
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		Turning Se	equence			Finish	Г	Out of S	Sequence				
		Wave/Twi	ist in Tub	oe oe	Γ	Folio		1	Dimensions				

Outside Dimensions

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0.00

0.00

Identify and stock in kanban rack

Location: /

Memo

QC21- Final Inspection - Work Order Release

Packaging

120

Quality Control

180

QC

Tw .

											DQA:	Date	:
NCR:	Yes	/ No				WORK ORDER NON-O	COI	NFORM	MANCE / UPDA	ATE			
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Out of Calibration

Out of Sequence

Outside Dimensions

Turning Sequence

Wave/Twist in Tube

Torque Waves in Extrusion

Drawing

Finish

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Picklist Print

Tuesday, September 11, 2012 3:46:05 PM

Work Order ID: 89857

89857

Parent Item:

D212-664-107TRN

Parent Item Name: Crosstube Turning Detail

D212-664-107TRN

Start Date: 9/11/2012

Required Date: 9/17/2012

Page 1

Start Qty: 1.00

Required Qty: 1.00

Comments:

IPP Rev:A New Issue 08-03-06 DD Verified by:ec

IPP Rev B Removed polish 08.04.02 EC verified: DD

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D6019-128		Manufactured	No			110	Each	46.0000	1	1			
* D004040	^-								44				

D6019-128

Crosstube Material

Location	Loc Qty	Loc Code		
LG	46			
69803	17			
75635	24			1 6
79741	5		I mont	12/09/
				/

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Cause		Date	Step	Qty		o	r Non-conformance	Ch	ief Eng	Descr	ription	Date	Verification	QC Inspector
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	-	Crushed/0	Crimped.				Burrs	<u> </u>	1	ions Incomplete/L	Jnclear	Part Lost/Mi	ssing	Wrong Stock Pulled
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DART AEROSPACE LTD	Work Order:	88857
Description: Crosstube Assembly (205/212/412 Low Fwd)	Part Number:	D212-664-147
Inspection Dwg: D212-664-147 Rev: B		Page 1 of 2

FIRST ARTICLE INSPECTION CHECKLIST

	spection Sheet wing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
	0.313	+/-0.010	.316	1/	0.5	VERN	CNC-08
	2.360	+0.005/-0.000	2.365	//		VERN	CNC ~08
	2.360	+0.005/-0.000	2, 365	//			1
Į	2.366	+0.005/-0.000	2.37/				
1	2.473	+0.005/-0.000	2.478	V			
	2.573	+0.005/-0.000	2.576				
EA	2.673	+0.005/-0.000	2.678				
SIDE	2.750	+0.005/-0.000	2.750	//			
	2.750	+0.005/-0.000	2.750			V	•
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	2.366	+0.005/-0.000	2-370	//		·	
	2.473	+0.005/-0.000	2.478				
m	2.573	+0.005/-0.000	2.576				
SIDE	2.673	+0.005/-0.000	2.678				
ड	2.750	+0.005/-0.000	2.750	<u> </u>		1	
	2.750	+0.005/-0.000	2.750	/		D	V
	0.126.528	+/-0.020	126.528			19pe	LG-22

											DQA:	Date:	
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											QA Closed:	Date:	
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Part N	NO					Scrap Use-as-is	}		Machining Small I noforming Finish	-	ł	e/Packaging	Other
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Cause		Date	Step	Qty		or Non-conformance	Ch	nief Eng	Description		Date	Verification	QC Inspector
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	 	entre No	t Concer	ntric to	U/S	BOM/Route	-	Hardwa		-	Over/Under	 	Temperature/Cure Weld
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1	l lc	uffs			1	Contamination	1	Mainte	mance	ļ	Part Moved		

Mislabeled

Out of Calibration

Out of Sequence

Outside Dimensions

Misread

Offset

Positioned Wrong

Power Loss/Surge

Other

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

Turning Sequence

Wave/Twist in Tube

Ripples in Bend

Heat Treat

Inspection Strip in Tube

Torque Waves in Extrusion

Countersink

Cut Too Short

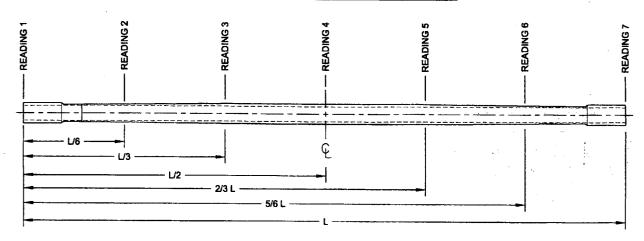
Drill Holes

Drawing

Finish

DART AEROSPACE LTD	Work Order:	88857
Description: Crosstube Assembly (205/212/412 Low Fwd)	Part Number:	D212-664-147
Inspection Dwg: D212-664-147 Rev: B		Page 2 of 2

WALL THICKNESS MEASUREMENT



	WALL	THICKNESS	MEASUREMEN	IT (IN)	Deviation	
Location	w1	w2	w3	w4	Δw (max-min)	TOLERANCE
READING 1 L= 0"	129	.114	.128	121	,015	-
READING 2 L=	.155	,155	.170	.165	.015	
READING 3 L=	.305	.306	. 306.	. 303	.003	
READING 4 L=	.318	,318	317.	.313	.005	0.048"
READING 5 L=	.309.	.313	305,	.290	.023	
READING 6	.164	305	.147	. 149	.035	
READING 7 L=	.119	.128	.124	.108	.020	

Calibration Result

Actual Block Thickness: 100-500

Sitescan 250 Measured Thickness: 100-500

Measured by:	K	Audited by:	The	Prototype Approval:	N/A
Date:	12-9-16	Date:	12-9-18	Date:	N/A

Rev	Date	Change	Revised by	Approved
Α	08.11.07	New Issue (P/O D212-664-107)	KJ/EC	
В	10.02.02	Dimension 126.528 was 126.53	KJ IA	
С	12.06.04	Wall thickness form added	KJ OX	

NCR: Yes / No WORK ORDER NON-CONFORMANCE / UPDATE Work Order: DISPOSITION AGAINST DEPARTMENT/PROCESS Part No. Scrap Use-as-is Work Order Update Use-as-is Work Order Update Cause Date Step Qty Or Non-conformance Or Non-conformance Or Non-conformance Order Update Use-as-is Use-as-is Work Order Update Use-as-is Use-as-is Work Order Update Use-As-as-is Work Order Update Use-As-as-is Work Order Update Use-As-as-is Work Order Update Use-As-as-is Work Order Update Use-As-as-as-as-as-as-as-as-as-as-as-as-as-as												DQA:	Date:	
Work Order: Part No.	NCR:	Yes	/ No				WORK ORDER NON-O	100	NFORM	MANCE / UPDATE		•		
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Process Supplier Training Unapproved FAULT CATEGORY Landing Gear Bending Centre Not Concentric to O/S Centre Not Concentric to O/S Cracks Broken/Damaged Grain Hardware Inspection Incomplete Part Incorrect Weld	1						•							
Supplier Training Unapproved Landing Gear	Other	Ш												
Training Unapproved FAULT CATEGORY Landing Gear General Bending Gear General Centre Not Concentric to O/S BOM/Route Grain Grain Gover/Under tolerance Temperature/Cure Inspection Incomplete Part Incorrect Weld		Щ				ł				·				
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Landing Gear Bending Centre Not Concentric to O/S Cracks General Grain Grain Hardware Hardware Inspection Incomplete Part Incorrect Weld	Unapproved			<u> </u>		<u> </u>						<u> </u>		
Bending Bend Grain Ovalized Pressure/Forced Centre Not Concentric to O/S BOM/Route Hardware Over/Under tolerance Temperature/Cure Cracks Broken/Damaged Inspection Incomplete Part Incorrect Weld						····		AUL	T CATE	GORY				
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Heat Treat Countersink Mislabeled Positioned Wrong Inspection Strip in Tube Cut Too Short Misread Power Loss/Surge Other		\vdash			Tubo	-	-	-	1		\vdash	- !		Tother

Offset

Out of Calibration

Out of Sequence

Outside Dimensions

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

Turning Sequence

Wave/Twist in Tube

Ripples in Bend

Torque Waves in Extrusion

Drill Holes

Drawing

Finish

Item	Qty -147	Qty -147B	Part Number	Description
1	X		D212-664-147	CROSSTUBE ASSEMBLY (205/212/412 LOW FWD)
2		X	D212-664-147B	CROSSTUBE ASSEMBLY (214 LOW FWD)
3	1	1	D6019-128	CROSSTUBE
4	2	2	D2893-1	SUPPORT
5	4	4	D3595-063-450	RUBBER CUSHION
6	2	2	D3659-1	CUFF
7	4	4	MS21920-25	CLAMP (OR MS21920-26)
8	44	44	CR3212-4-06	RIVET (OR M7885/3-4-06)
9	A/R	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)
10	A/R	A/R	SIKAFLEX-241/-291	SEALANT (OR PROSEAL 890 OR MIL-S-8802 CLASS B2 SEALANT)

GENERAL NOTES:

8

- 1) MATERIAL: MANUFACTURED FROM D6019-128
- FINISHED LENGTH = 126.528±0.020 (BEFORE BENDING/TRIMMING)
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
 PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
- PAINT OUTSIDE PER DART QSI 005 4.2

 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.

 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- IDENTIFICATION: SCRIBE DART PART NUMBER "D212-664-XXX" AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS.
 WEIGHT: D212-664-147 = 24.2 bs (PER IIN-D212-664)
 D212-664-147B = 24.2 bs (PER IIN-D212-664)

- PART IS SYMMETRIC ABOUT CENTERLINE
- WHEN MACHINING TAPER, RUN CUTTER OFF PART. BLEND OUT EDGE LONGITUDINALY, TRANSITION SHOULD BE SMOOTH
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 8 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D., EXCEPT UP TO 10% IS ALLOWED IN AREA NOTED.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
 12) INSTALL D2893-1 SUPPORT USING 0.03 TO 0.05 THICK LAYER OF MAGNOBIO 6398 TO THE SURFACE OF D2893-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 13) INSTALL MS21920-25 CLAMPS (OR -26) WITH D3595-063-450 RUBBER CUSHIONS TO SECURE THE D2893-1
- SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE OF CROSSTUBE SUPPORT.

 14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SUFFACE OF THE TUBE. THE OUTSIDE SURFACE OF MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCHACE OF AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

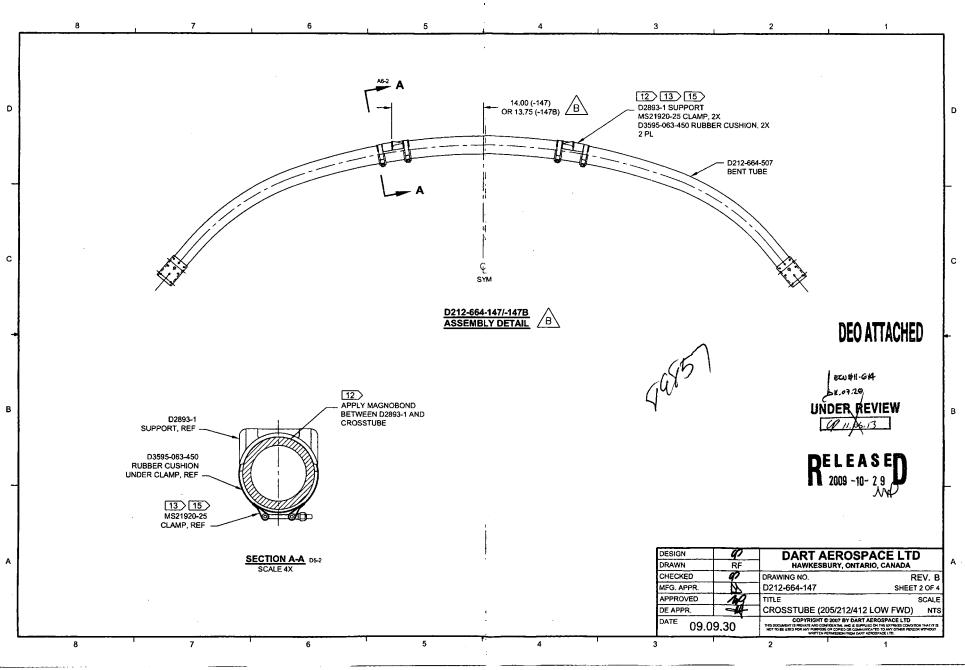
 16) INSTALL D3659-1 CUFF AFTER CHEMICAL CONVERSION COAT BUT BEFORE PAINT, WITH A LAYER OF
- SIKAFLEX-241/-291 OR PROSEAL 890 OR MIL-S-8802 CLASS B2 SEALANT BETWEEN CUFF AND CROSSTUBE. SEAL EDGE OF CUFF TO ENSURE NO GAPS.
- 17) TOUCH-UP HOLES WITH CHEMICAL CONVERSION COAT.

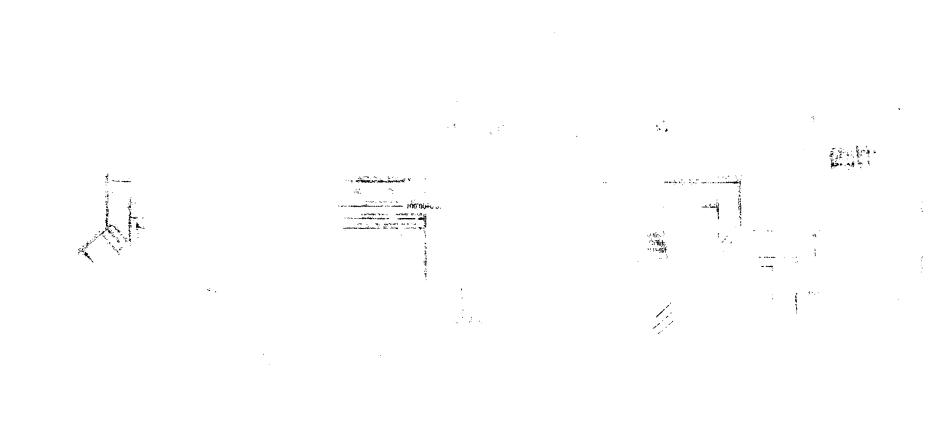
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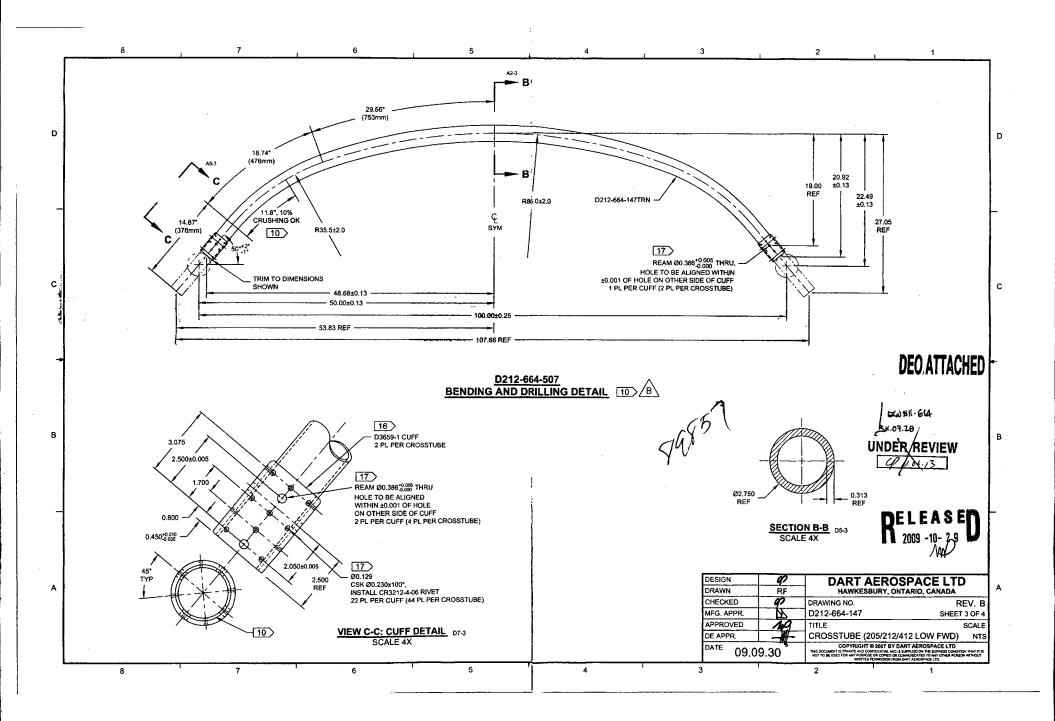
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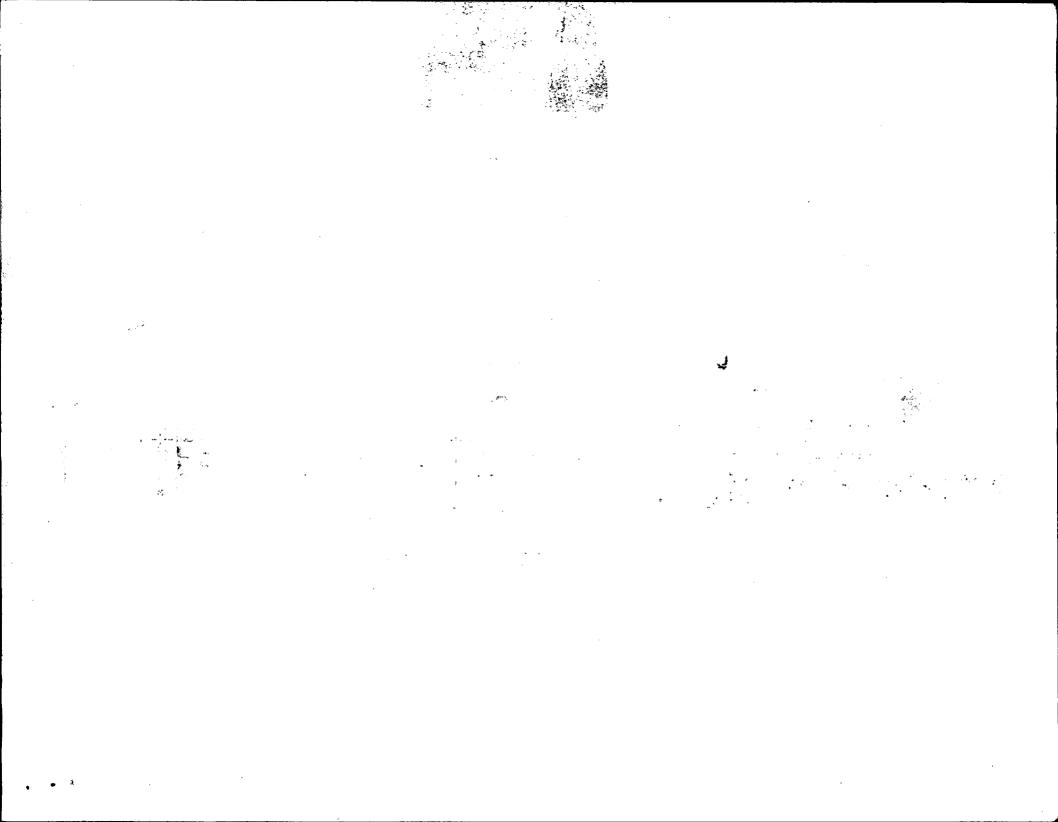
В		REVISE GENERAL NOTES/PART LIST; UPDATE TO CURRENT STANDARDS; ADD -147B (ZN C4-2, D4-2) RF 09.09.30						
Α	NEW IS	SSUE		CP	07.07.07			
REV.			DESCRIPTION	BY	DATE			
DESIGN P			DART AEROSPACE LTD					
DRAWN RF		RF	HAWKESBURY, ONTARIO, CANADA					
CHECK	D	P	DRAWING NO.		REV. B			
MFG, AF	PPR.	77	D212-664-147	8	SHEET 1 OF 4			
APPROVED 10		NO	TITLE		SCALE			
DE APPR.		-#	CROSSTUBE (205/212/412 LOW FWD) NTS					
DATE	09.0	9.30	COPYRIGHT © 2007 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENT AND REST SUPERIOR OF THE CONFIDENT MOT TO BE USED FOR ANY PURPOSE OF COMMEND OF COMMENDATION OF THE PRESON WITHOUT WITHOUT PERMISSION FROM DART ARROSPACE TIO.					

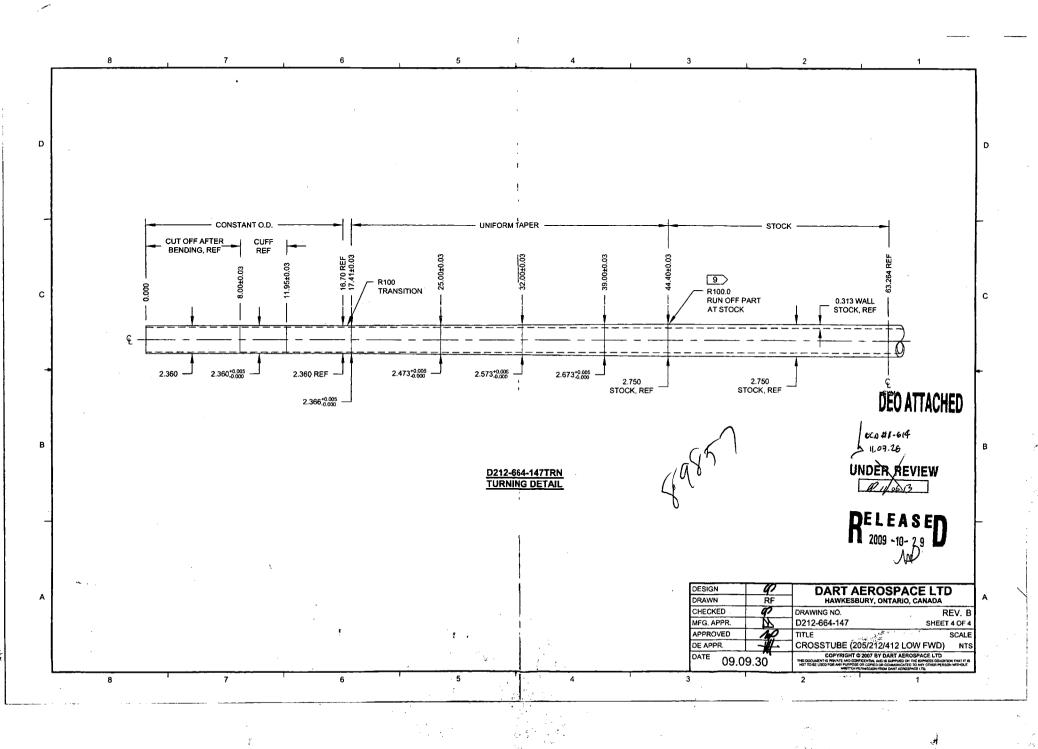
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DRAWING	NO.	TITLE		REV. B	DART A	ROSPACE LTD	D.E.O. NO),	SHE	ET NO.	SCALE
D212-66	4-147	CROSSTUE	BE ASS'Y (2	205 LOW FWD)	ENGINE	ERING ORDER	D212-66	64-147- <u>B</u> -1	SHEE	T1 OF 1	NTS
DRAWN	P		CHECKED	NS	MFG. APPR.	125	APPROVED	MP.	DE APPR.	#	
DATE	11.07.	15	DATE	11.07.20	DATE	11.07.21	DATE	11/07/21	DATE	11.07.21	

PURPOSE:

REPLACE MAGNOBOND WITH PROSEAL.

CHANGE:

IS:

item	Qty -147	Qty -147B	Part Number	Description
9	A/R	A/R	PROSEAL 890 B-2	SEALANT, AMS-S-8802 CLASS B-2

WAS:

9	A/R	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023
				ADHESIVE (TEXTRON/BELL SPEC. 299-947-100,
			.:	TYPE II, CLASS 2 ADHESIVE)

NOTE 12 & 15. SHEET 1 IS AMENDED AS FOLLOWS:

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- 12) TO INSTALL D2893-1 SUPPORT: ABRADE MATING SURFACE OF SUPPORT AND CROSSTUBE WITH 180-GRIT SANDPAPER AND REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY A 0.04" TO 0.07" THICK LAYER OF PROSEAL 890 CLASS B-2 (OR AMS-S-8802 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.

WAS:

- 12) INSTALL D2893-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2893-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.





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